Software Engineering System

Usability Tools

Under NOS 2

(Level 617B Release)

Software Release Bulletin

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A. Introduction

This Software Release Bulletin (SRB) contains information about the Software Engineering Systems (SES) Usability Tools that is not readily available elsewhere.

Section B gives a brief description of the component products comprising the SES Usability Tools. Pertinent manuals are listed for each product.

Section C describes the release level 617B features and changes for each of the products.

Section D describes the installation procedures for each of the products.

Section E is a collection of notes, clarifications and final changes pertaining to this release.

B. Product Description

Software Engineering System (SES) Usability Tools is the collective name referring to seven separate products:

- o NOS TOOLS
- o CYBIL 170 Code Generator
- o CYBIL P-Code Generator
- o NOS DEFINE
- o NOS GRAPH
- o NOS CHART
- o CDCNET Support Tools

These products provide the user with an easy-to-use interactive environment for functions typically performed in software development. All run under the NOS operating system on the 6000, CDC CYBER 70, 17X, 170-700, 170-800 or 180-800 series systems. (Subsequent references to 170 in this SRB apply to all these systems.)

Each of the packages may be ordered separately from Software Manufacturing and Distribution (SMD). The following product interdependencies exist:

(1) NOS TOOLS is the base package and is required to run the other six products. They are not stand alone products.

(2) NOS CHART also requires NOS GRAPH and in some cases, the CYBIL 170 Code Generator. (see the following product description for NOS CHART)

All of the packages are available in binary form only.

Note that the SES User's Handbook which accompanies the NOS TOOLS package describes the user interfaces for all of the tools in all of the product packages.

The following is a brief description of each product package:

1. NOS TOOLS

   NOS TOOLS is a comprehensive package of software tools which support software development activities. A procedure file processor and an easy to use command language are also a part of this package.

   The following categories of tools are included:

   - Source text maintenance
   - Library management
   - Document formatting
   - File space management
   - Compilation and linking
   - File printing
   - File conversion, manipulation and editing
   - Information access and exchange
   - User to user communication
   - Source code preprocessing

   Facilities are also provided to allow users to develop their own tools to custom tailor their own tools environment.

   NOS TOOLS contains the facilities for installation of the other product packages.

   Manuals included with this product are:

   - SES User's Handbook (6057250)
   - SES Procedure Writers Guide (60460270)
   - TXTCODE 2.0 Reference Manual (60460280)
   - TXTFORM 1.5 Reference Manual (60460290)

   An on-line manual version of the SES User's Handbook is also included (L60457250).

2. CYBIL 170 Code Generator

CYBIL is a high level language which has been heavily influenced by the programming language PASCAL. The language is block structured, with strong data typing, targeted at decreasing the life cycle costs of software development. The language implementation provides for compile time and run time checking to assist the development of reliable software products. The full ASCII character set is supported. CYBIL provides separate compilation, static data initialization, execution time fixing on the size of adaptable data types, memory management facilities and improved readability.

This compiler runs on and generates code for the 170. In addition, a set of tools complement the compiler and form the CYBIL Development Environment.

Delivery includes the following components:

- Self-compiling CYBIL compiler on the 170
- CYBIL source code formatter which makes code more readable and eases updating
- CYBIL symbolic debugger which allows interactive communication with an executing program
- Numerous CYBIL-callable miscellaneous utilities, including:
  - I/O interfaces
  - NOS interfaces
  - Screen Formatting interfaces

Manuals included with this product are:

- CYBIL Reference Manual (60455280)
- CYBIL Handbook (60457290)
- CYBIL I/O Reference Manual (60460300)
- Miscellaneous Routines Interface Reference Manual (60460310)
- CYBIL-CC Interactive Debugger ERS (60460320)
- ERS for CYBIL Formatter (60461810)

On-line manual versions of the CYBIL Reference Manual (L60455280) and the Miscellaneous Routines Interface Reference Manual (L60460310) are also included.

3. CYBIL P-Code Generator

This CYBIL compiler runs on the 170 and generates P-code for the UCSD version IV.0 P-system. These P-codes can be interpretively executed on the P-system. In addition, a set of tools complement the compiler and form the CYBIL P-code Development Environment. A separate license for the UCSD P-system must be obtained.

Delivery includes the following components:

- o Compiler which runs on the 170 and generates P-code for the UCSD Version IV.0 P-system.
- o CYBIL source code formatter which makes code more readable and eases updating
- o Object code management facility for managing P-system object code on the 170
- o Object code formatter to prepare the object code for downloading to the P-system
- o Facility for downloading object code
- o Linker for object code on the P-system

Manuals included with this product are:

- o CYBIL P-code Reference Manual (60461290)
- o CYBIL Handbook (60457290)
- o ERS for SES Object Code Utilities (60460330)
- o ERS for CYBIL Formatter (60461810)

An on-line manual version of the CYBIL Reference Manual is also included (L60455280).

4. NOS DEFINE

NOS DEFINE is a set of tools to create and maintain a data dictionary and to generate reports from a data dictionary. A data dictionary contains data definitions, process specifications and module descriptions.

NOS DEFINE includes the following capabilities:

- o Create a new data dictionary from form-free text contained on an input file.
- o Merge two existing data dictionaries to form a new, third data dictionary.

- Display all or selected parts of a data dictionary at a terminal or print on a line printer.
- Interactively edit entries contained within a data dictionary.
- Cross reference all or selected parts of a data dictionary.
- Cross check a data dictionary for completeness and consistency.
- Cross reference hierarchical relationships between entries in a data dictionary.

Manuals included with this product are:

- NOS DEFINE Data Dictionary Tools User's Handbook (60457260)

An on-line manual version of the NOS DEFINE Data Dictionary Tools User's Handbook is also included (L60457260).

5. NOS GRAPH

NOS GRAPH tools support the creation and maintenance of diagrams used in Structured Analysis/Structured Design.

NOS GRAPH includes the following capabilities:

- Software Computer Aided Design - Graphics (SCADG) provides for the interactive creation and updating of Data Flow Diagrams, Structure Charts and Data Structure Diagrams associated with the Structured Analysis/Structured Design Methodology. Diagrams may be saved for later use in a NOS file or graphics notebook. SCADG requires a CDC 721-30 (with graphics/firmware option), IST-III or Tektronix 4014 graphics terminal. Hardcopy of diagrams may be made on a printer local to the terminal.
- Software Computer Aided Design - Graphics Editor (SCADGEDIT) provides a variety of utility functions to help maintain a graphics notebook file created by SCADG. These functions provide for manipulating whole diagrams but no graphics display or input. Title listing and editing, notebook file reordering and diagram copying are some of these functions. SCADGEDIT does not require a graphics terminal.

Manuals included with this product are:

- NOS GRAPH Graphics User's Handbook (60457270)

An on-line version of the NOS GRAPH Graphics User's Handbook is also included (L60457270).

6. NOS CHART

NOS CHART is a tool that creates structure charts from CYBIL 170 source code or FORTRAN source code. This product is not a stand alone product - it requires NOS TOOLS and NOS GRAPH to run. The CYBIL 170 code generator package is also required to generate structure charts from CYBIL source code.

The structure charts produced are modeled after those recommended in the Structured Analysis/Structured Design (SASD) programming development techniques.

Manuals included with this product are:

- NOS GRAPH Graphics User's Handbook (60457270)

An on-line version of the NOS GRAPH Graphics User's Handbook is also included (L60457270).

7. CDCNET Support Tools

The CDCNET Support Tools provide a MOTOROLA MC68000 development environment on a CYBER 170.

Code generation, object file and library manipulation for the MC68000 processor are provided.

Delivery includes the following components:

- A CYBIL cross compiler that executes on the CYBER 170 and generates code for the Motorola MC68000.
- A cross assembler that executes on the CYBER 170 and generates code for the MC68000.
- Object code management utilities for managing CYBIL and assembler generated object code on the CYBER 170. Facilities are provided for creating libraries of object modules and adding, changing, deleting and examining the modules.
- Utilities for combining object modules into composite modules and for linking object modules to form memory images.
- Tools for building absolute files and purging debug symbol tables.
- Tools for packing object modules for subsequent hardware downloading and for generating files of Motorola S records.

- A CYBIL source code formatter which makes code more readable and eases updating.

- A PASCAL to CYBIL source code translator.

Manuals included with this product are:

- CDCNET CYBIL Reference Manual (60462400)
- MC68000 Cross Assembler User's Guide (60462700)
- ERS for CYBIL Formatter (60461810)
- MC68000 Utilities Usage (60462500)
- ERS for SES Object Code Utilities (60460330)

An on-line version of the CYBIL Reference Manual is also included (L60455280).

C. Release Level 617B Features and Changes

1. NOS TOOLS

Tools that used SORT/MERGE 4 have been changed to now use SORT5.

A new facility (XREFMAP) has been added to generate a cross-reference of module names, entry points and external references from a load map.

A new tool (SCOOP) has been added which compares two files and lists the changes that transform one to the other.

Corrective code has also been added.

2. CYBIL 170 Code Generator

A online manual for the Miscellaneous Routines Interface Reference Manual has been added to assist CYBIL users in locating reusable service subroutines.

Corrective code has also been added.

3. CYBIL P-Code Generator

Corrective code updates have been made.

4. NOS DEFINE

Corrective code updates have been made.

5. NOS GRAPH

Changes have been made to the internal structure of NOS GRAPH to reduce core requirements and improve performance.

The FORMAT command has been changed to give the user control between diagrams when displaying multiple diagrams without hardcopy.

Corrective code has also been added.

6. NOS CHART

This release of NOS CHART included the capability to generate structure charts from FORTRAN source code. Two new tools (FTNTOSCT) and (FTNTODD) have been added to accomplish this.

The PRINT and UN parameters have been expanded. The UN parameter replaces the CYUN parameter and now applies to all files rather than just input files. The PRINT parameter can now be given values to control printing.

Corrective code has also been added.

7. CDCNET SUPPORT TOOLS

The module binder (BIND68K) has been enhanced to do multiple binds on one call.

The GOF, GOL object code utilities have been expanded to accept parameters from a specified file.

TRANDLIB has been modified to generate a library in an alternative format.

Corrective code has also been added.

D. Product Installation

The installation of the SES Usability Tools products on NOS 2 is described below. NOS TOOLS must be installed prior to the installation of any or all of the other five products.

1. NOS TOOLS installation (Level 617B)

The installation of NOS TOOLS is accomplished in three steps described below. Before you start you must establish a catalog of user name 'SES' on NOS. The tools binaries must reside in a catalog of this name. Once this has been done, proceed as follows:

- Log in under the SES catalog and REQUEST the product tape as:

  ```
  REQUEST,TAPE,PE,NT,VSN=REL19A,PO=R,F=I,LB=KL.
  ```

- Copy the INSTALL procedure from the tape as follows:

  ```
  SKIPF,TAPE 1                    This makes the installation
  COPYBF,TAPE,INSTALL.            procedure a local file.

  BEGIN,,INSTALL.                 This loads the remaining files
                                  and completes the initial step.
  ```

- SYSEDIT the absolute binaries on the files:
  SESBINS
  NEWSES

  This establishes SES, ACQUIRE, EXTRACT, EDT and SESMSG as system resident.

Installation is now complete. All users may now access NOS TOOLS from their catalog.

Prior to using the tools all users are encouraged to read chapter 1 of the SES User's Handbook. Particular attention should be given to establishing PROFILE's.

2. CYBIL 170 Code Generator, CYBIL P-Code Generator, NOS DEFINE, NOS GRAPH, NOS CHART and CDCNET Support Tools installation (Level 617B).

   - After NOS TOOLS Level 617B has been installed, log in under the SES catalog and enter the following:

     ```
     SES.INSTALL    VSN=vsn
     ```

     ```
     where: vsn =  REL19B   (CYBIL 170 Code Generator)
                   REL19D   (CYBIL P-Code Generator)
                   REL19E   (NOS DEFINE)
                   REL19C   (NOS GRAPH
                   REL19F   (NOS CHART)
                   REL19G   (CDCNET Support Tools)
     ```

   One command per product completes the installation. All users may now access the installed tools from their catalogs.

E. Release 617B Errata

None required